

Claims

- [c1] A method of forming an electronic device, said method comprising:
forming at least one localized stressor region within said device.
- [c2] The method of claim 1, wherein said at least one localized stressor region comprises a first localized stressor region, said method further comprising:
forming a second localized stressor region within said device,
said first localized stressor region and said second localized stressor region causing a region therebetween to be stressed.
- [c3] The method of claim 2, wherein said first localized stressor region and said second localized stressor region comprise a same type material.
- [c4] The method of claim 3, wherein said same type material comprises one of a compressive stressor material and a tensile stressor material.
- [c5] The method of claim 2, wherein said device comprises a FinFET (Fin Field Effect Transistor).

- [c6] The method of claim 5, wherein said FinFET contains a plurality of fins interconnected by fin connectors and said first and second localized stressor regions are formed on said fin connectors of said FinFET.
- [c7] The method of claim 5, wherein said first and second localized stressor regions are formed on a source and drain region of said FinFET.
- [c8] The method of claim 2, wherein said device comprises a planar FET (Field Effect Transistor).
- [c9] The method of claim 8, wherein said stressor regions are formed on a source and drain region of said planar FET.
- [c10] The method of claim 4, wherein said same type material comprises a compressive material and primary charge carriers in said region being stressed comprise holes.
- [c11] The method of claim 4, wherein said same type material comprises a tensile material and primary charge carriers in said region being stressed comprise electrons.
- [c12] The method of claim 2, wherein said region being stressed causes a carrier mobility in said stressed region to be one of increased and decreased, relative to a carrier mobility in a region without said stress.

- [c13] The method of claim 1, wherein said device comprises one of a plurality of devices in an electronic circuit, said method further comprising:
selectively providing a blocking mask over devices in said electronic circuit which are not to receive said at least one localized stressor region.
- [c14] A method of forming a stress region in an electronic device, said method comprising:
forming a first localized stressor region within said device; and
forming a second localized stressor region within said device,
said first localized stressor region and said second localized stressor region causing a region therebetween to be stressed.
- [c15] The method of claim 14, wherein said region being stressed causes a carrier mobility in said stressed region to be one of increased and decreased, relative to a carrier mobility in a region without said stress.
- [c16] An electronic device comprising:
at least one localized stressor region within said device.
- [c17] The device of claim 16, wherein said device comprises a field effect transistor (FET) structure.

- [c18] The device of claim 17, wherein said FET structure comprises a source region and a drain region and said at least one localized stressor region comprises a first localized stressor region and a second localized stressor region, said first localized stressor region and said second localized stressor region being respectively located on said source region and said drain region of said FET structure.
- [c19] The device of claim 17, wherein said FET structure comprises a FinFET structure having a source region and a drain region and said at least one localized stressor region comprises a first localized stressor region and a second localized stressor region, and said first localized stressor region and said second localized stressor region are respectively located on said source region and said drain region of said FinFET structure.
- [c20] The device of claim 17, wherein said FET structure comprises a FinFET structure having a plurality of fins interconnected by fin connectors and said first localized stressor region and said second localized stressor region are respectively located on said fin connectors.
- [c21] An electronic circuit, comprising:
the device of claim 16.

- [c22] An apparatus comprising:
at least one electronic device, said at least one device including at least one localized stressor region for tuning a carrier mobility in said at least one localized stressor region.
- [c23] The method of claim 1, wherein at least one of said at least one localized stressor region interacts with a stressed region located outside said device.
- [c24] The method of claim 1, wherein said at least one localized stressor region is used to generate one of a compression stress and a tensile stress.
- [c25] The method of claim 1, wherein said at least one localized stressor region is located within said device to generate a stress that enhances a performance of said device.
- [c26] The method of claim 25, wherein said performance enhancement comprises an increase in a carrier mobility.
- [c27] The method of claim 25, wherein said performance enhancement comprises a decrease in a carrier mobility.
- [c28] The method of claim 1, wherein said at least one localized stressor region is located to generate a stressed region in at least one of a direction parallel to a current

flow and perpendicular to a current flow.

- [c29] The method of claim 1, wherein said at least one localized stressor region is used to create a symmetrically stressed region.
- [c30] The method of claim 1, wherein said at least one localized stressor region is used to create an asymmetrically stressed region.